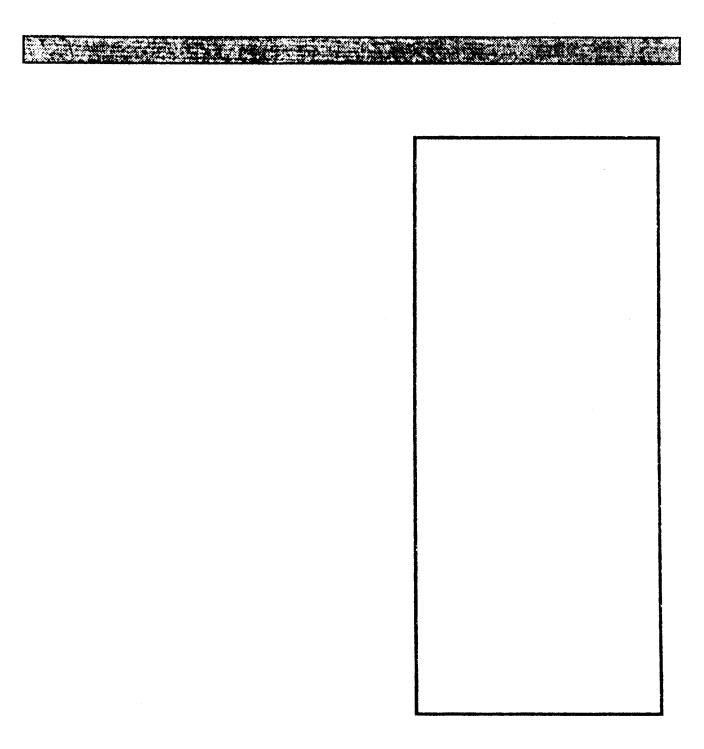


HT600 PROGRAMMER/TUNER USER'S MANUAL



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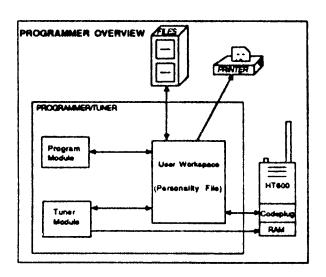
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INTRODUCTION

The HT600 radio incorporates an EEPROM (Electrically raseable/Programmable Read Only Memory) containing re radio's personality. An EEPROM can be electronically programmed and erased using the proper programming signals. The Programmer/Tuner can be used to modify the EEPROM to alter the radio's personality as the user's needs change. Parameters such as frequency, PL, deviation, radio options, etc. can be modified through the use of the Programmer.

The HT600 Programmer/Tuner has been designed to be user friendly and incorporates a menu driven approach for ease of use. The Programmer is broken down into various sections as can be seen below. The Program module will allow you to modify all of the radio's features and options. The Tuner module allows you to modify radio parameters such as deviation, squelch, and volume settings in RAM. All of the radio's features are modified in what is known as the User's Workspace (Personality File), which serves as a medium to pass information between modules.



REQUIRED EQUIPMENT LIST

1. PROGRAMMER/TUNER COMPUTER

The HT600 Programmer software is designed to operate on the IBM P.C., Convertible, and XT family of computers. It is suggested that one of these computers be used. IBM DOS 2.0 or higher, an Asynchronous Serial Communications Adapter, and RAM memory of 256K bytes minimum are required.

- RADIO INTERFACE BOX (RIB) P/N 01-80353A74
 Voltage level shifter to enable communications between
 the radio and the computer's RS232 Serial
 Communications Adapter.
- 3. WALL MOUNTED POWER SUPPLY P/N 01-80357A57 Used to supply power to the RIB.
- COMPUTER INTERFACE CABLE P/N 01-80357A44
 Used to connect the computer's Asynchrounous Serial
 Communications Adapter to the RiB.

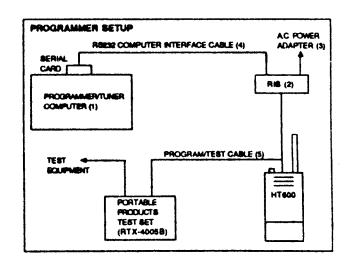
- 5. PROGRAM/TEST CABLE RTK-4205A
 Provides electrical interconnect to the RIB and the
 RTX4005B Portable Products Test Set for programming
 and testing of the HT600 radio. The Program/Test
 Cable is necessary for changing radio frequency,options.
 - and tuning parameters in conjunction with the HT600 Programmer. It also permits testing of the radio's receiver and transmitter parameters.
- 6. PROGRAMMER SOFTWARE

The HT600 Programmer/Tuner software is available on both 5 1/4 in. (RVN-4005A) and 3 1/2 in. (RVN-4006A) floppy disks. The software provides you with the capability of changing the radio's frequency, options, and electronically tunable parameters.

PROGRAMMER/TUNER SETUP

Refer to the appropriate IBM manual on detailed computer equipment set up.

- Make sure the Asynchronous Serial Comm. Adapter Card
 is configured for COM1. If it is configured for COM2,
 then see your Serial Adapter manual for the appropriate
 switch settings to configure it for COM1. If using a
 Convertible, just plug in the Serial/Parallel module and
 use the application selector diskette supplied with the
 Convertible to set the module to run off the Battery supply.
- Connect the terminal, keyboard and power cord to the appropriate places in the back of the computer. This is not necessary if using a Convertible.
- Connect the computer interface cable to the Serial Adapter or to the left side of the serial/parallel module if using a Convertible. Connect the other end of the computer interface cable to the RIB.
- Plug the Wall Mount Power Supply into a wall outlet and the other end into the RIB.
- Plug the 25 pin connector on the HT600 Program/Test Cable into the RIB and the 13 pin plastic connector to the radio's Universal Connector. The 12 pin metal plug connects to the Portable Products Test Set (RTX-4005B).

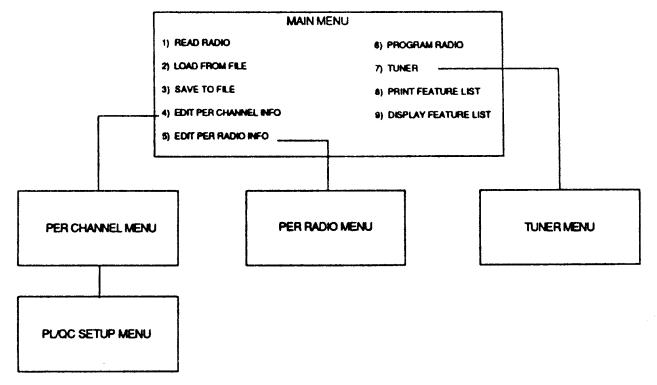


PROGRAMMER/TUNER STARTUP

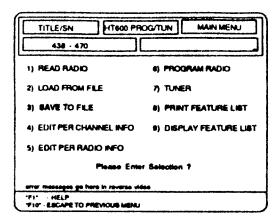
- Place the diskette containing DOS into the disk drive, close the disk drive door and turn on the computer. If using a hard drive, see Appendix C under "Hard Drive Installation and Use". Refer to your DOS manual if you have any problems while in DOS.
- Next the computer will prompt you for the correct time and date. At this point you may either enter the correct time and date or just press ENTER to bypass this etep.
- 3. Remove the DOS disk from the disk drive and insert the disk containing the HT600 Programmer/Tuenr software. If a second drive is available, place your data disk in the other drive. See your DOS manual for instructions on formatting (initializing) and saving to your data disk. All files should be saved on your data disk and not on the program disk.
- 4. Turn on the HT600 radio and verify proper operation.
- Be sure that the drive letter displayed on the screen corresponds to the disk drive which contains the HT600 Programmer/Tuner software. If this is not the case, type the drive name where the program resides (i.e.; "A:" or "B:").
- Type "HT600" and in a few seconds the Title screen will be displayed. Type any key to continue.
- 7. The next screen will allow you to select the proper bandsplit for the radio to be modified or file to be created. The selected bandsplit must match the frequency range of the radio. Select the appropriate bandsplit by pressing a number 1-7.

- The selected bandsplit will now be displayed on all following menus in the lower left hand box at the top of the menu. After a bandsplit is selected a default workspace is created (see Appendix for default settings). Next, you will be prompted to enter a Title or Serial number. You can enter up to ten characters and then press the ENTER key. Pressing ENTER without putting in a Title or Serial number will immediately take you to the Main menu. The Title/SN will be displayed in the upper left hand box at the top of all of the following menus.
- 8. Upon pressing the ENTER key from the bandsplit menu you will enter the Main menu. If only a few parameters need to be modified in the radio, or if the radio is only to be tuned, then the radio must be read first before proceeding to ensure that the proper information is resident in the computer. You may do this by selecting "1" for the Main menu option "Read Radio". You are now ready to either modify the connected radio's personality or tune.
- 9. You may also use the Programmer to create files which may be used for programming an HT600 radio at a later date. Keep in mind that the radio must be of the same bandsplit as the file that is created. To do this you must either enter the complete personality of the radio you wish to create from the default file or you may load a radio personality file from disk, to start from, using option 2 of the Main menu "Load From File". When all of the necessary parameters have been modified to create the desired radio personality, select option 3 from the Main menu "SAVE TO FILE".

MENU OVERVIEW



"AIN MENU



The Main menu is the entry point into all other menus in the Programmer, with the exception of the PL/QC SETUP menu. The only valid keyboard keys in this menu are:

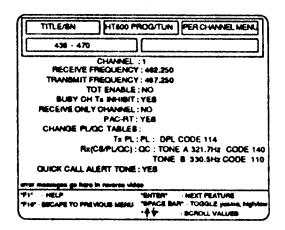
F1 - used to access the Help menu.
F10 - used to return to the Bandsplit menu.
NUMERIC KEYS - used to select a lower level menu.

There are nine selections available from within this menu.

- READ RADIO This selection allows you to read the contents of the attached radio for viewing or editing 'he radio's personality. The radio must be turned on and all connections made (see "Programmer/Tuner Setup") before pressing '1'.
- 2. LOAD FROM FILE This option is selected whenever you wish to retrieve a file that has been previously saved. See your DOS user's manual on how to use the Directory to view all of the files loaded on floppy or hard drive. Once the file is loaded you may either edit it or program an attached radio. After pressing '2', enter the name of the file and press the enter key. The Programmer's workspace will then be loaded with the contents of the file.
- 3. SAVE TO FILE This option is selected whenever you wish to save the contents of the current workspace to a file on floppy or hard drive. After pressing '3', enter the name of the file and press the enter key. A maximum of eight characters is allowed for a filename. See your DOS user's manual for the valid letters and characters allowed in a filename.
- 4. EDIT PER CHANNEL INFO This menu allows you to modify the HT600 radio's per channel features. See the "PER CHANNEL MENU" for more details. Press a '4' to select this menu.
- EDIT PER RADIO INFO This menu allows you to modify the HT600's per radio options. See the "PER RADIO MENU" for more details. Press a '5' to select this menu.

- 6. PROGRAM RADIO This selection will allow you to program the attached radio with the contents of the current workspace. The workspace can be generated by reading a radio or file and then modifying it, or by building a workspace from the default file, as you enter the Bandsplit menu. The radio must be turned on and all connections made (see "Programmer/Tuner Setup") before pressing '6'.
- 7. TUNER This selection will allow you to tune the radio's deviations, squelch thresholds, and volume setting. See the "TUNER MENU" for more details. Press a '7' to select this menu.
- PRINT FEATURES LIST This selection is used to obtain a printed listing of the features contained in the personality file.
- DISPLAY FEATURE LISTING -This selection is used to obtain a displayed listing of the features contained in the personality file.

PER CHANNEL MENU



Upon pressing the "4" key from the Main menu you will enter the Per Channel menu. This menu is used to modify any features in the radio which may vary from channel to channel. The valid keyboard keys in the Per Channel menu are:

F1 - used to access the Help menu.

F10 - used to return to the Main menu.

NUMERIC KEYS - used to enter frequencies and channel

numbers.

ARROWS - used to scroll through PL, DPL, Quick Call codes, and Channel number.

- used to move to the next menu item.

TAB - used to move to the next menu item.

SHIFT TAB - used to move to previous menu item.

SPACE BAR - used to toggle on/off options, select between PL/CS/QC, TX PL on/off, and

to go to the PL/QC Table.

ENTER

The first item in the Per Channel menu is used to select the desired channel. When the desired channel is selected the menu will be updated with the frequencies and option settings for that particular channel. You may select the channel by two ways; either type in the channel number and press the ENTER key or use the up/down arrow keys to scroll through the valid channels. Scrolling provides a fast way of examining the settings for each channel, since the menu is updated each time a new channel number is displayed.

Description of per channel features:

RECEIVE/TRANSMIT FREQUENCY - This feature allows you to enter or change a frequency. The frequency must be within the defined frequency range of the selected bandsplit appearing at the top of the menu. The frequency will be displayed in Megahertz (MHz). It is not necessary to type in all the digits in the frequency. You only need to type in enough digits to properly describe the frequency, ie typing 150 and ENTER will yield a frequency of 150,0000. All trailing zeros and decimal point will be automatically added to save typing time and errors. When the desired frequency is displayed press the ENTER key and the frequency will be added to the personality file maintained within the computer's memory.

TOT ENABLE - TOT (Time Out Timer) will prevent the radio from remaining in the transmit mode for more than one minute by automatically dekeying the radio. The default value is "No".

BUSY CHANNEL TRANSMIT INHIBIT - This feature prevents you from transmitting on a channel with receive PL enabled, when a carrier is present. Busy Channel Transmit Inhibit may either be enabled or disabled via the space bar. The default value is "No".

RECEIVE ONLY CHANNEL - This feature prevents you from transmitting on this channel. Receive Only Channel may either be enabled or disabled via the space bar. The default value is "No".

PAC-RT - This option may either be enabled or disabled via the space bar. When enabled, PAC-RT will turn off PL in the transmit mode when the PL switch is in the carrier squelch position. The default value is "No".

CHANGE PL/QUICK CALL TABLE - This selection allows you to set up the PL and Quick Call codes in the personality file. If this option is not chosen, the current PL/Quick Call configuration is maintained. Pressing the space bar, while on this feature, will take you to the PL/QC SETUP MENU.

The four possible configurations are:

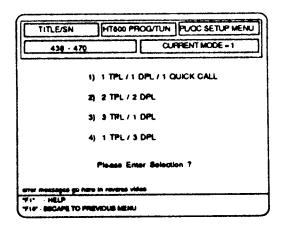
- 1. 1 TPL, 1 DPL, 1 QUICK CALL
- 2. 2 TPL, 2 DPL
- 3. 3 TPL, 1 DPL
- 4. 1 TPL, 3 DPL

TRANSMIT PL - This selection is used to toggle the transmit mode between PL or no PL. If PL is selected the current Tone PL frequency and code or DPL code for this channel will be displayed along side of the selection. The different PL codes, which were setup via the "CHANGE PL/QC TABLE" option, may now be scrolled via the up/down arrow keys. The default value is "no PL".

RX (PL/CS/QC) - (Receive PL, Carrier Squelch or Quick Call) This selection is used to toggle the receive mode between carrier squelch, PL or Quick Call. If PL is selected the current Tone PL frequency and code or DPL code for this channel will be displayed along side of the selection. The different PL codes, which were setup via the "CHANGE PL/QC TABLE" option, may now be scrolled via the up/down arrow keys. If Quick Call is selected, then the Quick Call codes and frequencies will be displayed alongside of the selection. The default value is "carrier squelch".

QUICK CALL ALERT TONE - This selection is used to enable or disable the Quick Call alert tones. This option may either be enabled or disabled via the space bar. The Quick Call option must be enabled for this option to function and is only visable if "mode 1" has been selected in the PL/QC SETUP Menu. The default value is "No".

PL/QC SETUP MENU



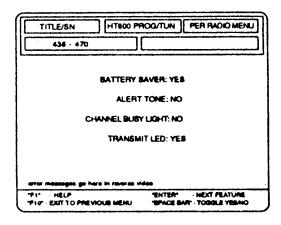
This menu provides you with the ability to enter up to 4 PL codes or frequencies or 2 PL code/frequencies and one Quick Call code pair. The following keyboard keys are valid in the PL/QC SETUP MENU:

F1 - used to access the Help menu.
F10 - used to return to the Per Channel menu.

NUMERIC KEYS - used to select the radio's signalling configuration.

are four possible configuration modes which the 300 radio can have. Upon selection of the appropriate mode you will be prompted with the first PL/Quick Call code to be set up. Selecting the same mode will allow you to change the current codes. Selecting a new mode will clear all of the PL/QC codes. You may now use the up/down arrows to scroll through the list of valid codes. Pressing the ENTER key will take you to the next code to be set up. Pressing "F10" will take you back to the PL/QC SETUP menu.

PER RADIO MENU



"hon pressing the "5" key from the Main menu you will ter the Per Radio menu. This menu is used to modify features in the radio which are the same for all channels. The valid keyboad keys in the Per Radio menu are:

F١ F10 - used to access the Help menu.

- used to return to the Main menu.

- used to move to the next menu item.

ENTER - Same as enter. TAR

SHIFT TAB - used to move to previous menu item.

SPACE BAR - used to toggle an on/off option.

Description of per radio features:

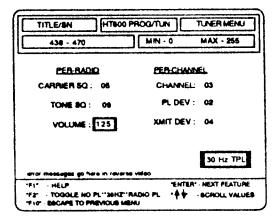
BATTERY SAVER - Battery Saver is used to conserve the life of the radio's battery. If this option is enabled, then the receiver will power down for periods of 60 ms, when there is no carrier present. If carrier is present (and PL has been detected if a PL channel), the radio will disable this feature and revert to the receive mode. Battery Saver may either be enabled or disabled via the space bar. The default value is "Yes".

ALERT TONE - This option is used to enable or disable the power up alert tone, the Time Out Timer tone, and the Transmit Inhibit alert tone. It does not disable the Quick Call alert tones however. Alert Tones may either be abled or disabled via the space bar. The default value YES".

CHANNEL BUSY LIGHT - This option is used to disable or enable the flashing green LED which signifies that a carrier is present on the channel (the channel is busy), when Receive Pt has been enabled on that channel. The Channel Busy Light may either be enabled or disabled via the space bar. The default value is "Yes".

TRANSMIT LED - This option is used to enable or disable the radio's Transmit LED, which indicates that the radio is in the transmit mode by a constant red LED. This option will also turn off the Low Battery Status indication. The Transmit LED may be either enabled or disabled through the use of the space bar. The default value is "Yes".

TUNER MENU



Upon pressing the "7" key from the Main menu you will enter the Tuner menu. After the radio has been programmed to the desired frequencies and the desired options, the Tuner menu may be used to adjust the transmit and PL deviation levels as well the squeich setting and the volume window. Make sure that the radio is turned on upon entering and exiting from the Tuner menu and that it has been programmed to its final form. The valid keys in the Tuner menu are:

F1 - used to access the Help menu.

F2 - used to toggle between (No PL, Radio's

PL. 30Hz PL).

F10 - used to return to the Main menu. **ENTER** - used to move to the next menu item. ARROWS - used to scroll channel number and values. When adjusting deviation in a PL radio the deviation must be set using a 30 Hz Tone PL frequency. In order to provide this capability, decress the "F2" key until 30Hz PL is displayed (The radio must be in the receive mode of operation). This is only a temporary condition. The radio's PL will be returned to normal upon exiting the menu or upon turning the radio off then on. When setting any values in the Tuner menu, immediate feedback is offered because the values are immediately changed in the radio's RAM. This means that if the radio is turned off and then on it will revert back to normal, but the values entered on the tuner menu will remain in the personality file maintained in the computer's memory. In order for these values to be made permanent in the radio you must return to the Main menu and select option 6, "Program Radio". The first item on the right hand side of the tuner menu, channel number, is used to select the desired channel. When the desired channel is selected the menu will be updated with the deviation settings for that particular channel. You may select the channel number by using the up/down arrow keys to scroll through the valid channels. Scrolling provides a fast way of seeing the settings for each channel, since the menu is updated each time a new channel number is displayed.

The tuner features are broken up into two parts. The left hand side of the menu refers to the per radio tuning features:carrier squelch, tone squelch, and volume. The right hand side of the Tuner menu refers to the per channel tuning features: PL deviation and transmit deviation. The tuning parameters may vary on a radio to radio basis therefore they should be set individually in every radio. If you decide to use a file that was set up for programming another radio the tuning parameters may have to be adjusted slightly.

CARRIER SQUELCH - This tuning feature will adjust the squelch threshold when the PL switch on the radio is in the carrier squelch position. This parameter is adjustable with a minimum of 0 and a maximum of 15. The default value is "07".

TONE SQUELCH - This tuning feature will adjust the squelch threshold when the PL switch on the radio is in the PL position. This parameter is adjustable with a minimum of 0 and a maximum of 15. The default value is "05".

VOLUME - This feature of the Tuner menu will set the maximum and minimum volume levels of the radio. Setting the volume does not just lower the maximum volume level, it adjusts both the maximum and the minimum level by shifting a volume window either upward or downward. A setting of 255 corresponds to maximum audio and a setting of 0 represents minimum audio. The default value is "255"

The next two features of the Tuner menu are the PL and Transmit deviation. These are set on a per channel basis. In order to make the proper adjustments the radio channel selector must be set to the same channel as appears on the screen. If the radio is not set to the same channel you will be prompted with a message to that effect, instructing you to set the radio to the proper channel or set the programmer to the proper channel. DO NOT IGNORE THIS MESSAGE. See the HT600 Service Manual for a more detailed description of the proper procedure for setting the deviation levels.

PL DEVIATION - This feature adjusts the deviation when the radio is expected to perform in the PL mode. The settings available for the PL deviation range from 0 to 15. A setting of 15 corresponds to maximum deviation and a setting of 0 corresponds to minimum deviation. This setting is used to adjust for low frequency deviation levels and is used in conjunction with the 30Hz PL feature, which can be enabled by pressing the "F2" key. Each depression of the "F2" key will toggle the program between 30 Hz PL, Radio PL, and No PL. The default value is "10".

TRANSMIT DEVIATION - This feature adjusts the transmit deviation. The settings available for the transmit deviation range from 0 to 31. A setting of 31 corresponds to maximum deviation and a setting of 0 corresponds to minimum deviation. This is used to adjust the voice deviation level (300 - 3000 Hz). The default value is "12".

APPENDIX A

KEY DEFINITION

F1 Help menu

F2 Toggle No PL, 30Hz PL, Radio PL.

F10 Escape to previous menu.

ENTER Move to next menu item.

TAB Move to next menu item.

SHIFT TAB Move to previous menu item.

SPACE BAR Toggle on/off features.

UP/DOWN ARROWS Scroll a list of values.

increment/decrement channel number

NUMERIC KEYS Used to select a submenu in the

Main Menu. Used to change channel number and frequency in the Per Channel Menu. Selects signalling configuration in the PL/QC mode.

APPENDIX B

List of the default settings when loading a default file from the Bandsplit menu.

PER RADIO FEATURES:

Battery Saver - YES
Alert Tone - YES
Channel Busy Light - YES
Transmit LED - YES

PER CHANNEL FEATURES:

Frequency None Time Out Timer NO Busy Ch. Tx Inhibit NO Receive Only Channel NO PAC-RT NO Transmit PL NO Receive PL/CS/QC CS QC Alert Tone NO PL codes None Quick Call Codes None

TUNING FEATURES:

Carrier Squelch - 07
PL Squelch - 05
Volume - 255
Transmit Deviation - 12
PL Deviation - 10

APPENDIX C

To install the HT600 Programmer/Tuner program on a hard disk perform the following steps:

- Go to a spot on the hard disk where you would like. the program to reside.
- Type MD HT600. This will create a new directory for the program.
- Type CD HT600. This will put you into the new directory you just created.
- Put the HT600 Programmer/Tuner disk into Drive A.
- Type Copy a: "." This will copy all the HT600 Programmer/Tuner program files over to the hard disk in the new directory you just created,

When you reboot your computer or when you wish to use the HT600 Programmer/Tuner you must first make sure you are in the HT600 directory. If the HT600 directory is at the first level of directories on your hard disk then all you need to do to get to that directory is to type CD HT600. If the HT600 directory is at a lower level then the first level of directories, you must type CD/Pathname/HT600. "Pathname" should be replaced with the names of the directories which are above the HT600 directory. See your DOS user's manual for more details.

APPENDIX D

To make a backup copy of your HT600

Programmer/Tuner software follow these steps:

TWO DRIVE SYSTEM:

- Put your DOS diskette in drive A and a blank diskette in drive B.
- Type A: This will make sure you are operating from drive A.
- 3. Type Format B: This will format the blank diskette in drive B.
- Insert your HT600 Programmer/Tuner diskette into Drive A.
- Type Copy A: *.*B: This will copy the HT600 files from drive A to the blank formatted diskette drive B.

ONE DRIVE SYSTEM:

- 1. Put your DOS diskette in the disk drive.
- 2. Type Format A: This will format the blank diskette.
- 3. Insert your blank diskette when prompted to do
- 4. Insert your HT600 Programmer/Tuner diskette.
- 5. Type diskcopy A: "." This will copy the HT600 files to the blank formatted diskette.
- Insert your blank diskette when prompted to do so.

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